

3M™ Zeta Plus™ S Series Filter Media

Zeta Plus S series filter media is composed of inorganic filter aid, cellulose and a resin system that imparts a positive charge to the filter matrix, aiding its adsorption of negatively charged contaminants.

Superior Particle Reduction

Zeta Plus filters are composed of advanced cellulose-based depth filtration media, designed to retain contaminants by both mechanical entrapment and electrokinetic adsorption. Zeta Plus filter media are composed of high surface area filter aids embedded in a cellulose fiber matrix. During the manufacturing process, molecules carrying a positive charge are chemically bonded to the filter matrix permanently forming an interconnected filtration structure with positively charged electrokinetic capture sites. The resulting porous depth filter is a tortuous network of charge-enhanced flow channels capable of removing bacteria, particulate, cellular debris and submicronic contaminants to a level which mechanical screening alone cannot achieve.

Cartridge Construction

Zeta Plus cartridges are designed for use with 3M™ Zeta Plus™ sanitary style stainless steel filter housings. Cartridges are constructed from individual cells of Zeta Plus S series filter media assembled together with polypropylene ring seals under predetermined compression and unitized by three, 316 stainless steel bands. Each cell is constructed using polypropylene molded edge seals and separators for high performance. Various gasket materials are available depending upon application. Filter cartridges are available in 8", 12", and 16" diameters, with surface area ranging from 650 cm² to 3.9 m² (0.7 ft² to 42.2 ft²) per cartridge.

For additional information, please refer to 3M Purification Technical Brief:
LIT 70-0203-4002-5

Capsule Construction

Zeta Plus S series media are available in ready to use, fully disposable BC capsules. The 3M™ Zeta Plus™ BC Series capsules are completely encapsulated disposable filters for small volumes.

Features & Benefits

Depth filtration media designed to retain contaminants by mechanical entrapment and electrokinetic adsorption.

- High contaminant holding capacity for economical filtration and reliable particle reduction.

Self-contained, single-use disposable capsule and cartridge modules.

- Reduced labor time for change-outs and elimination of cleaning validation.



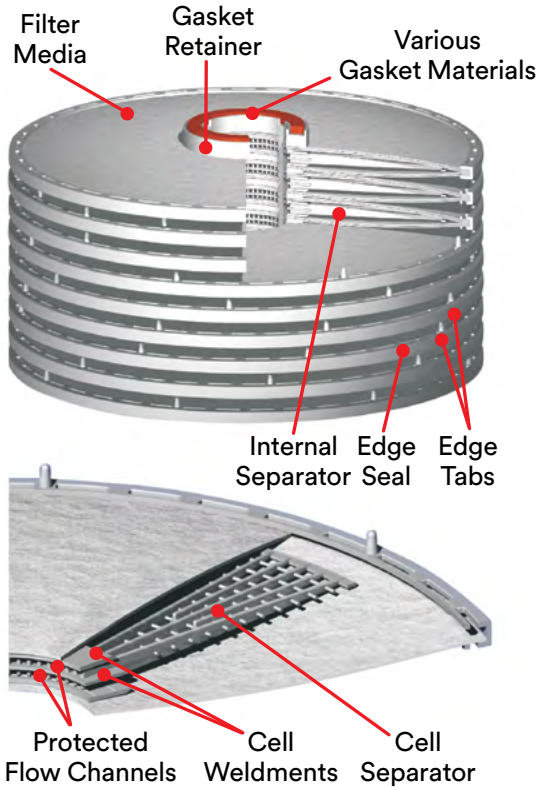


Figure 1. Individual cells of Zeta Plus S series filter media are constructed using polypropylene molded edge seals and separators for high performance.



Figure 2. Zeta Plus BC capsule filters are ideal for pilot scale and low volume applications.

Flow Rates

Graph 1 displays flow rates obtained with 21°C clean water. Optimum flow rates vary by application, but in general, lower flux rates often result in longer service life, greater throughputs and superior system economics.

Grade Selection

The Zeta Plus S series filter media are available in a broad range of grades. Nominal reduction rating is indicated in Table 1 and Graph 1 for each available grade. This information is intended for use as a guide to filter selection. Particles smaller than the rated pore size will be reduced by Zeta Plus S series filter media due to electrokinetic adsorption. Actual operating conditions and the product to be filtered should be considered in grade selection. The optimal filtration system for your particular application can be determined by on-site test equipment or sample evaluation in our Applications Laboratory.

Graph 1. Clean water flow rate @21°C

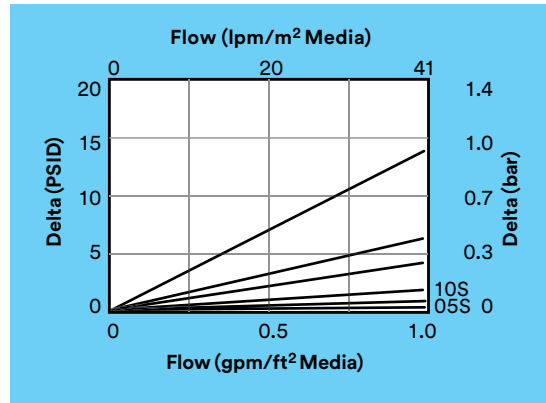


Table 1: Recommended Applications

Application	Recommended Grades	Nominal Micron Removal (µ)
Coarse Clarification	05S, 10S	5 to 0.5
Medium Clarification	30S, 50S, 60S	2 to 0.2
Fine Clarification	90S	0.2 to 0.05

3M™ Zeta Plus™ S Series Filter Media

Table 2: 3M™ Zeta Plus™ S Series Specifications

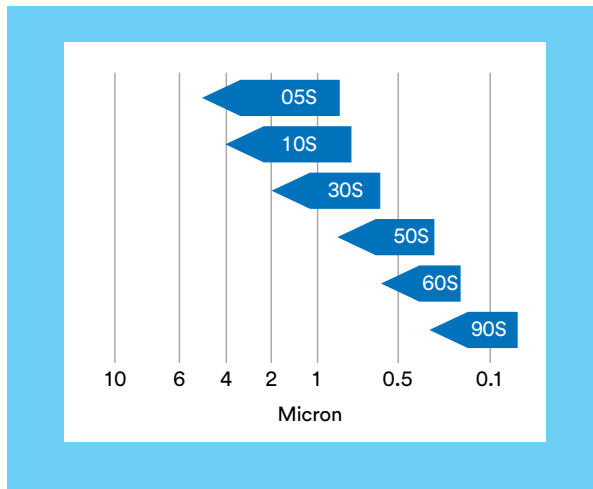
Configuration	Capsule & Cartridge Materials of Construction	Effective Filtration Surface Area
BC25 Capsule	Polypropylene capsule shell, glass filled polypropylene over-mold	3.9 in ² (25 cm ²)
45109 (8 diameter cartridge, 8-cell)	Polypropylene cartridge support and edge seal	2.8 ft ² (0.26 m ²)
45167 (8 diameter cartridge, 7-cell plug-in)		2.5 ft ² (0.23 m ²)
45237 (12" diameter cartridge, 12-cell)		12.3 ft ² (1.1 m ²)
45245 (12" diameter cartridge, 16-cell)		16.4 ft ² (1.5 m ²)
Z16P (16" diameter cartridge, 14-cell)		34.7 ft ² (3.2 m ²)
Z16P (16" diameter cartridge, 16-cell)		39.7 ft ² (3.7 m ²)
Z16H (16" diameter cartridge, 17-cell)		42.2 ft ² (3.9 m ²)*

*60, 70 grades only

Table 3: Recommended Operating Parameters

Maximum Operating Pressure	BC25 Capsules: 2.8 bar (40 psig) maximum inlet pressure, 2.4 bar (35 psid) maximum capsule pressure drop
	Standard 3M™ Zeta Plus™ Cartridges: 2.4 bar (35 psid) maximum cartridge pressure drop
Maximum Operating Temperature	BC25 Capsules: 40°C (104°F)
	Standard 3M™ Zeta Plus™ Cartridges: 82°C (180°F)
Required Pre-use Rinse	All Products: 54 l/m ² (1.3 gal/ft ²)
Sterilization Parameters	BC25 Capsules: Autoclave, 30 minutes @ 121°C (250°F) (1 cycle)
	Standard 3M™ Zeta Plus™ Cartridges: Autoclave or in situ steam sterilization, 1 hour @ 121°C (250°F)

Graph 2. Nominal Retention Rating



Sanitary Housings

3M provides a wide array of standard and specially designed sanitary filter housings to hold Zeta Plus cartridges. All housings are designed with the food and beverage in mind and feature 316L mirror-polished surfaces and easy-to-clean components.



3M™ Zeta Plus™ S Series Filter Media Ordering Guide

Table 4: 8" Diameter Cartridges

Catalog Number	Gasket Material	Grade
45109 (8" 8-cell DOE)	11 - Nitrile	05S
	12 - Neoprene	10S
	13 - Fluorocarbon	30S
	14 - EPR	50S
	22 - Silicone	60S
45167 (8" 7-cell, plug-in)	23 - PTFE	90S
	01 - Nitrile	
	02 - EPR	
	03 - Fluorocarbon	
	04 - Silicone	
	09 - Fluoropolymer Encapsulated Fluorocarbon	

Table 5: 3M™ Zeta Plus™ BC Capsule S Series

Catalog Number	Configuration	Grade
BC0025	L - Luer S - Sanitary	05S
		10S
		30S
		50S
		60S
		90S

Table 6: 12" Diameter Cartridges

Catalog Number	Material	Gasket	Grade
45237 (12" 12-cell DOE)	01 - Polypropylene	A - Silicone	05S
45244 (12" 9-cell DOE)			10S
45245 (12" 16-cell DOE)			30S
	02 - Talc-filled Polypropylene	B - Fluorocarbon	50S
			60S
			90S
	03 - Polypropylene, Hastelloy® bands	C - EPR	30S
			50S
			60S
		D - Nitrile	90S
			E - Fluoropolymer

Table 7: 16" Diameter Cartridges

Catalog Number	Configuration	Gasket	Grade
Z16	P - 14 cell H - High area*** R - 14 cell with Hastelloy® bands T - High area with Hastelloy® bands	A - Silicone	05S
		B - Fluorocarbon	10S
		C - EPR	30S
		D - Nitrile	50S
		E - Fluoropolymer	60S
			90S

***High Area Cell Count - 30S & 50S 16 cell; 60S & 90S 17 cell; Not available for 05S & 10S.
Bodyfeed cartridge available, please order 45802 (16", 9 cell)

Intended Use and Product Selection: 3M™ Zeta Plus™ S Series Filter Media are intended for use in industrial applications of aqueous fluids in accordance with the applicable product instructions and specifications. 3M™ Zeta Plus™ S Series Filter Media are also intended for use with non-aqueous fluids where materials of construction are compatible. Since there are many factors that can affect a product's use, the customer and user remain responsible for determining whether the 3M product is suitable and appropriate for the user's specific application, including user conducting an appropriate risk assessment and evaluating the 3M product in user's application.

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